

The listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (Canceled)

2. (Currently Amended) The edge termination structure of Claim 10,  
wherein the floating guard rings extend a first distance into the silicon carbide layer  
and the surface charge compensation region extends a second distance into the silicon  
carbide layer, the second distance being less than the first distance.

3. (Currently Amended) The edge termination structure of Claim 10,  
wherein the surface charge compensation region is lighter doped than the guard rings.

4. (Currently Amended) The edge termination structure of Claim 10,  
wherein the surface charge compensation region extends completely between adjacent  
ones of the floating guard rings.

5. (Currently Amended) The edge termination structure of Claim 10,  
wherein the surface charge compensation region extends between adjacent ones of the  
floating guard rings but does not extend completely between two adjacent floating  
guard rings.

6. (Currently Amended) The edge termination structure of Claim 10,  
wherein the surface charge compensation region comprises implanted regions in the  
silicon carbide layer.

7. (Currently Amended) The edge termination structure of Claim 10,  
wherein the surface charge compensation region comprises a plurality of surface  
charge compensation regions.

8. (Currently Amended)      The edge termination structure of Claim 10,  
wherein the surface charge compensation region comprises a single region that  
overlaps the floating guard rings.

9. (Currently Amended)      The edge termination structure of Claim 10,  
wherein the surface charge compensation region comprises a second silicon carbide  
layer on the silicon carbide layer.

10. (Currently Amended)      The An edge termination structure of Claim 1,  
for a silicon carbide semiconductor device, comprising:

a plurality of spaced apart concentric floating guard rings in a silicon carbide  
layer that at least partially surround a silicon carbide-based semiconductor junction;  
an insulating layer on the floating guard rings; and  
a silicon carbide surface charge compensation region between the floating  
guard rings and adjacent the insulating layer, wherein the surface charge  
compensation region has a dopant concentration such that the surface of the surface  
charge compensation region adjacent the oxide layer is partially depleted by surface  
charges of the oxide layer and fully depleted when a reverse bias is applied to the  
device.

11. (Currently Amended)      The edge termination structure of Claim 10,  
wherein the surface charge compensation region has a dose charge of from about  
 $1 \times 10^{12}$  to about  $7 \times 10^{12} \text{ cm}^{-2}$ .

12. (Currently Amended)      The edge termination structure of Claim 10,  
wherein the surface charge compensation region extends a distance of from about 0.1  
 $\mu\text{m}$  to about 2.0  $\mu\text{m}$  into the silicon carbide layer.

13. (Currently Amended)      The edge termination structure of Claim 10,  
wherein the surface charge compensation region does not extend completely between  
two adjacent floating guard rings and to provide a gap of from about 0.1  $\mu\text{m}$  to about

2.0  $\mu\text{m}$  between the surface charge compensation region and one of the two adjacent floating guard rings.

14. (Currently Amended) The edge termination structure of Claim 10,  
wherein the floating guard rings are uniformly spaced, non-uniformly spaced and/or combinations of uniformly and non-uniformly spaced.

15. (Currently Amended) The edge termination structure of Claim 10,  
wherein the guard rings extend from about 0.1  $\mu\text{m}$  to about 2.0  $\mu\text{m}$  into the silicon carbide layer.

16. (Currently Amended) The edge termination structure of Claim 10,  
wherein the guard rings have a spacing of from about 0.1  $\mu\text{m}$  to about 10  $\mu\text{m}$ .

17. (Currently Amended) The edge termination structure of Claim 10,  
wherein the plurality of floating guard rings comprises from about 2 to about 100 guard rings.

18. (Currently Amended) The edge termination structure of Claim 10,  
wherein the guard rings extend a distance of from about 2  $\mu\text{m}$  to about 1 mm from the semiconductor junction of the device.

19. (Currently Amended) The edge termination structure of Claim 10,  
wherein the floating guard rings have a dopant concentration of from about  $1 \times 10^{18}$   $\text{cm}^{-3}$  to about  $1 \times 10^{20}$   $\text{cm}^{-3}$ .

20. (Currently Amended) The edge termination structure of Claim 10,  
wherein the silicon carbide layer is an n-type silicon carbide layer and the guard rings and surface charge compensation region are p-type silicon carbide.

21. (Currently Amended) The edge termination structure of Claim 10, wherein the silicon carbide layer is a p-type silicon carbide layer and the guard rings and surface charge compensation region are n-type silicon carbide.

22-42. (Canceled)

43. (Currently Amended) ~~The~~An edge termination structure of ~~Claim 42~~ for a silicon carbide semiconductor device, comprising:

a plurality of spaced apart concentric floating guard rings in a silicon carbide layer that surround at least a portion of a silicon carbide-based semiconductor junction;

an insulating layer on the floating guard rings; and  
means for neutralizing effects of charges at an interface between the insulating layer and the silicon carbide layer in the region of the floating guard rings, wherein the means for neutralizing comprises means for connecting adjacent guard rings when a maximum blocking voltage is not applied to the device and isolating adjacent guard rings when the maximum blocking voltage is applied to the device.

44-45. (Canceled).

46. (Original) The edge termination structure of ~~Claim 42~~43, wherein the means for neutralizing comprises a surface charge compensation layer between adjacent ones of the guard rings.

47. (Original) The edge termination structure of Claim 46, wherein an amount of charge in the surface charge compensation layer is small enough so that the surface charge compensation layer is depleted at a voltage lower than a blocking voltage of the device.

48. (New) The edge termination structure of Claim 43, wherein the means for neutralizing comprises means for capacitively coupling adjacent guard rings when a sufficient reverse bias is applied to the device.